

IN THE CLAIMS:

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Currently Amended) ~~In a~~ A wavelength router for fiber optical networking and computer interconnects, ~~the improvement~~ comprising:

at least one diffraction grating operated in a Littrow configuration which utilizes only N wavelengths to interconnect N inputs to N outputs in a fully non-blocking manner, wherein N is any number, and

a second diffraction grating positioned to receive outputs from said at least one diffraction grating, wherein said at least one diffraction grating and said second diffraction grating are being augmented by an optical wavelength add-drop multiplexer.

5. (Canceled)

6. (Canceled)

7. (Currently Amended) ~~In a~~ A wavelength router for fiber optical networking and computer interconnects, ~~the improvement~~ comprising:

at least one diffracting grating operated in a Littrow configuration which utilizes only N wavelengths to interconnect N inputs to N outputs in a fully non-blocking manner, wherein N is any number,

a collection optic assembly positioned to receive outputs from ~~another~~ said at least one diffraction grating, and

a plurality of wavelength selective add/drop filter modules positioned to receive outputs from said collection optic assembly.

8. (Canceled)

9. (Currently Amended) The ~~improvement~~ wavelength router of Claim 7, wherein each of said filter modules include different filters.

10. (Currently Amended) The ~~improvement~~ wavelength router of Claim 7, wherein said plurality of filter modules comprises N-1 different filters for N inputs and N wavelengths.

11. (Currently Amended) ~~In a~~ A wavelength router for fiber optical networking and computer interconnects, ~~the improvement~~ comprising:

a first diffraction grating,

a second diffraction grating positioned to receive outputs from said first mentioned diffraction gratings, wherein said first and said second grating operate so as to utilize only N wavelengths to interconnect N inputs to N outputs in a fully non-blocking manner, wherein N is any number,

at least one collection and re-direction optic assembly positioned to direct inputs to said first and said second ~~first-mentioned~~ diffraction gratings, and

a retro-reflector assembly positioned to receive predetermined N-1 complimentary outputs from said second diffraction grating and adapted to vertically displace and retro-reflect said predetermined N-1 outputs so as to retro-reflect solely predetermined complimentary outputs produced by said first and said second gratings for redirection by said at least one collection and re-direction optic assembly. ~~and reflect certain of said outputs back through said diffraction grating.~~

12. (Currently Amended) The ~~improvement~~ wavelength router of Claim 11, wherein said collection and re-direction optic assembly additionally redirects the reflected outputs back through said first and said second ~~the~~ diffraction gratings.

13. (Canceled)

14. (Currently Amended) The ~~improvement~~ wavelength router of Claim 7 8, wherein said filter modules are of a 3-port type.

15. (Currently Amended) The ~~improvement~~ wavelength router of Claim 4, additionally including at least one coupler for combining outputs from said at least one diffraction grating and said second grating.

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (New) A wavelength router for fiber optical networking and computer interconnects, comprising:

at least one diffracting grating operated in a Littrow configuration which utilizes only N wavelengths to interconnect N inputs to N outputs in a fully non-blocking manner, wherein N is any number,

a collection optic assembly positioned to receive outputs from another diffraction grating, and

a plurality of filter modules positioned to receive outputs from said collection optic assembly, said filter modules selected from the group consisting of one or more directional couplers and wavelength add-drop multiplexers to provide fully non-blocking interconnection.